Forecasting Tips

Two Features in MS Excel

By Jon Vencil

Throughout the course of developing and running any project, decisions must be made now based on the outcome of future events. For example, future revenue and expenses must be estimated to secure funding. Market opportunities must be evaluated based on their potential size, growth, and profit potential. To help reduce the uncertainty around these future events, many forecasting techniques have been developed. However, in the words of Phillip Kotler, “All forecasts are built on one of three information bases:

- what people say,
- what people do, or
- what people have done".

The last base “what people have done” involves the analysis of historical data and forms the basis for most statistical forecasting techniques. Many of these techniques are available as features in most spreadsheet applications. This article summarizes two common methods and their application. For a more thorough presentation and examples of these and other techniques using Microsoft Excel, refer to Business Analysis with Excel by Conrad Carlberg, Ph.D.[1]

TREND Function

A trend is a relatively smooth long-term movement in a series of data over time. Where a trend is assumed to be linear (no variable in the equation is raised to a power greater than 1.0) the TREND function in Excel is the appropriate forecasting approach. All you need is three columns,

- one column for the sequential time periods (month, quarter, year, etc),
- one column for the corresponding data (revenue, profits, etc.) and
- one column for the TREND forecast results.

In the Excel function dialog box choose function category: “Statistical”, and function name: “TREND”. The *Known_y’s* represent the historical data. The *Known_x’s* represent the corresponding time periods and the *New_x’s* represent the time periods to be forecast. To forecast future periods, add row values to the time column and enter the TREND formula in the TREND column but be sure to add the cell range for the *New_x’s* in the function’s dialog box.

To enter the formula throughout your cell range at one time complete the dialog box but do not click “OK”. Instead press Ctrl+Shift+Enter. This creates a special formula called an array. For more on Excel arrays, see the Excel help index tab and type “array”.

GROWTH Function

What do you do when a trend is not straight but curved - either upward or downward? In these situations, the GROWTH function may be more appropriate. These “nonlinear” situations (some variables are raised to a power greater than 1.0) can occur when measuring productivity, such as the number of additional returns filed because of hiring additional staff, or sales volume over time for a new offering. To use the GROWTH function set up data columns the same as for TREND and choose function name: “GROWTH”. Step through the dialog in the same fashion as TREND.

[1] In MS Excel 2016 and newer a FORECAST SHEET icon in provided in the Data ribbon. The feature automates the functions discussed in this article.

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These two methods provide you with valuable insight into trends affecting your firm's operations and profitability. They can also provide you with indications of your firm's future direction. However, relying solely on a forecast in all situations is risky for several reasons.

- Forecasting based on past data may not be a reliable predictor of future activity due to unanticipated events. Every publicly traded company and mutual fund emphasizes this fact in their prospectus.
- Available data do not provide a guaranteed indication of the relationship of the data outside the sample period. For example, new product adoption typically exhibits a linear, nonlinear, or combination relationship over the product's lifecycle.
- These methods help identify correlations between data series, but they do not address the causal nature of the data. For example, X and Y are related. But does X cause Y or does Y cause X? This relationship is important for planning future actions.

Conclusion

Excel's built-in functions will help you gain valuable insight into your business. However, to minimize the risk of error they should be used with a healthy dose of skepticism. In the same way that accounting software won't provide accurate results if you are using faulty accounting practices, consistently forecasting accurately requires proper technique, experience, and even a little bit of luck.

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